A MOLLUSK HUNT IN WYOMING.

BY JUNIUS HENDERSON.

The recent molluscan fauna of Wyoming is probably less known than that of any other state in the Union. A number of mountain chains, more or less isolated by broad expanses of plains unfavorable to land snails, promise interesting results from a conchological exploration of the region, especially with reference to the genus *Oreohelix*. I have long looked in that direction with covetous eyes. In 1917 it was my privilege to spend the two weeks from August 23 to September 7 in that region, in company with Edward L. Schwabe. We traveled hastily by auto, with camp outfit, passing almost entirely across the state from south to north. The great distance traveled, together with long stretches of barren territory between collecting places, and the lack of opportunity for side trips into more favorable territory, prevented great results, but we obtained an acquaintance with the region that will be invaluable in planning another and longer season's work in the future. Unfortunately the war conditions have prevented a continuance of the work during the present year. Dr. H. A. Pilsbry has rendered valued assistance in the determination of some of the land shells, and Dr. Bryant Walker has identified or confirmed the identity of most of the fresh-water snails. The *Pisidia*, of which we found very few, were submitted to Dr. V. Sterki some time ago, but as yet I have no report from him. In the card index of the University of Colorado Museum, I find noted the published records of the following species and subspecies for Wyoming:

Columella alticola (Ing.)
Euconulus fulvus alaskensis Pils.
Lymnæa apicina Lea
Lymnæa binneyi Tryon
Lymnæa elodes var.?
Lymnæa jacksonensis Baker
Lymnæa proxima Lea
Lymnæa traski Tryon
Oreohelix cooperi (W. G. B.)
Oreohelix cooperi minor (Ckll.)

Oreohelix cooperi maxima Pils.
Oreohelix pygmæa Pils.
Oreohelix strigosa Gld. (*depressa* Ckll.?)
Oreohelix strigosa extremitatis Pils. & Ferr.
Physa sayi Tappan
Planorbis bicarinatus (*antrosus* Conr.)
Pomatiopsis robusta Walker
Pupilla muscorum (L.)
Pyramidula cronkhitei anthonyi Pils.
Pyramidula striatella Anth.
Succinea avara Say
Vallonia cyclophorella Ancey
Vitrina pfeifferi Newc. (*alaskana* Dall)

Oreohelix cooperi minor should be eliminated from the list, because, in the first place, a re-examination of the material so recorded shows that it is true *cooperi*, and in the second place, investigations recently carried on by me at the type locality of *minor* convince me that the small form so named was based upon examples merely dwarfed by adverse conditions in one portion of a normal *cooperi* colony. Baker has placed the Ft. Bridger record of *Lymnæa elodes* var. in the synonymy of *L. palustris*. The *Pyramidula striatella* record is probably *P. c. anthonyi*, which would still further reduce the list, but it may possibly be *P. shimeki cockerelli* Pils. *Pupilla muscorum* is probably *P. m. xerobia* Pils., but one cannot be certain of it. *Physa sayi* is doubtful, but if not that, it refers to some other *Physa*, so its elimination would not reduce the number of species. This leaves a list of about 22 species, 12 of which are confined to two genera, with no recorded pelecypods at all. Possibly some recorded species have been overlooked by me. The only large land snails are in the genus *Oreohelix; Polygyra*, which occurs to the northward in Montana, not having been found in Wyoming. *Oreohelix* is an ancient genus in the state, *O. grangeri* Ckll. & Hend. and *O. megarche* Ckll. & Hend. occurring in rocks of Eocene age.

Our two weeks' work, besides furnishing new localities for some of the species already recorded from the state, adds the following species, including four additional genera, two of which are pelecypods:

Agriolimax campestris (Binn.)
Ferrissia rivularis Say
Lampsilis ventricosa (Barnes)
Lymnæa bulimoides cockerelli Pils. & Ferr
Lymnæa caperata Say
Lymnæa humilis modicella Say?
Lymnæa obrussa Say
Physa anatina Lea
Physa gyrina Say
Physa integra Hald.?
Physa sayi warreniana Lea?
Physa walkeri Crand.
Planorbis parvus Say
Vallonia gracilicosta Reinh.
Zonitoides arborea (Say)

In a recent paper Daniels and I asserted the probable occurrence of *L. b. cockerelli* in Wyoming, which is now confirmed.

Following is an account of the stations visited and the mollusks obtained at each:

Sta. 232, reservoir where the road from Cheyenne to Casper crosses Lodgepole Creek, about thirteen miles north of Cheyenne.

Pisidium sp.
Agriolimax campestris (Binn.)
Lymnæa obrussa Say
Physa sayii warreniana Lea?
Planorbis parvus Say
Succinea avara Say
Vallonia gracilicosta Reinh.

Sta. 233, a branch of Bear Creek, north of Horse Creek.

Pisidium sp.
Lymnæa obrussa Say
Physa walkeri Crand.

Sta. 234, small reservoir six miles northeast of Wheatland.

Lymnæa caperata Say
Physa gyrina Say
Planorbis parvus Say

Sta. 235, bridge over Laramie river, below Uva.

Lampsilis ventricosa (Barnes)
Lymnæa obrussa Say
Lymnæa humilis modicella Say? (two specimens)
Oreohelix cooperi (W. G. B.)
Pyramidula cronkhitei anthonyi Pils.
Succinea avara Say
Vallonia gracilicosta Reinh.
Zonitoides arborea (Say)
Physa gyrina Say
Physa integra Hald.?
Planorbis parvus Say

Only a single broken example of the *Oreohelix* was found, in the river bottom, and it may have been brought by the stream from far away in the spring flood.

Sta. 236, creek bottom about ten or twelve miles north of Uva, under willows and cottonwoods.

Vallonia gracilicosta Reinh.
Vitrina alaskana Dall.
Zonitoides arborea (Say)

Sta. 237, five miles northwest of Douglas, in a small spring brook.

Lymnæa obrussa Say
Physa gyrina Say
Planorbis parvus Say

Sta. 238, Boxelder Creek, about 18 or 20 miles northwest of Douglas.

Ferrissia rivularis Say
Lymnæa obrussa Say
Physa gyrina Say
Planorbis parvus Say
Pyramidula cronkhitei anthonyi Pils.
Succinea avara Say
Vallonia gracilicosta Reinh.
Vitrina alaskana Dall
Zonitoides arborea (Say)

Sta. 239, a very small reservoir formed by throwing an earth dam across a dry draw to catch the storm waters for stock, four miles west of Arminta. A few very rotten shells of *Lymnæa bulimoides cockerelli* Pils. & Fer. were found.

Many dead salamanders were along the bank and a few live ones were seen in the water. This shallow water-hole did not look as though it could have existed very long, and it was a long distance from any other water. We were much surprised to see several great blue herons fly from the water at our approach, and wondered what they were feeding upon, or we should not have looked for any mollusks there. It would be interesting to know by what agency they got there. Hand (NAUTILUS, XXVII, 1914, p. 144) noted *Planorbis vermicularis* in a small artificial pond in California, and raised the same question, "How did they get there?"

Sta. 240, at base of a rocky sandstone ledge about twelve miles north of Lost Cabin on the road to Ten Sleep.

Pupilla muscorum xerobia Pils.
Vallonia cyclophorella Ancey

Sta. 241, creek bottom about three miles above Ten Sleep.

Agriolimax campestris (Binney).
Oreohelix cooperi (W. G. B.)?
Physa gyrina Say ("peculiar long form")
Pyramidula cronkhitei anthonyi Pils.
Succinea avara Say
Vallonia gracilicosta Reinh.
Vitrina alaskana Dall
Zonitoides arborea (Say)

Only one fragment of *Oreohelix* was found, apparently *O. cooperi*, and it may have been brought down from up-stream in the spring flood. *Agriolimax* is represented by two very small examples.

Sta. 242, creek bottom at Hyattville, among willows, narrow-leafed cottonwoods, etc. *Vallonia gracilicosta* Reinh.

Sta. 243, bottom lands on Shell Creek, at mouth of White Water Creek, about five miles east of Shell.

Lymnæa obrussa Say
Physa anatina Lea
Planorbis parvus Say
Pyramidula cronkhitei anthonyi Pils.
Vallonia gracilicosta Reinh.

Physa anatina is so identified by Dr. Bryant Walker. We have another lot of the same species, also identified by Dr. Walker, collected by Mr. Don W. Walker two and a half miles east of Shell.

Sta. 244, just within the mouth of Shell Creek Canyon, on south side of creek, about two miles above Sta. 243, on limestone ledge devoid of shrubbery and other vegetation except close-clinging lichens on the rock. *Oreohelix yavapai extremitatis* Pils. & Ferr. was plentiful, clinging to the open face of the rocks in plain sight, though the weather was hot and dry. This form has been recorded from the same canyon by Dr. Pilsbry. There were no rock slides or other cover, such as *Oreohelix* usually requires, anywhere near. We obtained 145 live examples and over 200 dead shells in a short search, one of the latter being reversed. I have never before seen any member of this genus in such an exposed position.

Sta. 245, about a mile or so from Sta. 244, same side of creek, under shrubbery. We obtained 31 *Oreohelix yavapai extremitatis* Pils. & Ferr. and 46 *O. pygmæa* Pils. alive, together with many dead shells. This is the type locality of the latter. Two of them were albinos. We also found *Pupilla muscorum xerobia* Pils., *Vallonia gracilicosta* Reinh., and *Zonitoides arborea* (Say).

Sta. 246, just within the mouth of White Creek Canyon, on south side, a couple of miles south of Sta. 245, in a small brush patch a few feet in diameter at the base of a low cliff near an old log building.

Euconulus fulvus alaskensis Pils.
Oreohelix cooperi form *obscura* Hend.
Oreohelix pygmæa Pils.
Oreohelix yavapai extremitatis Pils. & Ferr.
Pupilla muscorum (L.)
Vallonia gracilicosta Reinh.
Vitrina alaskana Dall.

Sta. 247, bluff 50 yards east of Sta. 246. *O. y. extremitatis* Pils. & Ferr. abundant, clinging to rocks and under scant mountain mahogany, clematis, etc., a few out on open ground, all active after the rain of the night before. Two dead shells

of *O. pygmæa* Pils. and seven dead shells of *O. s. obscura* were also found here. The *extremitatis* from this canyon are much less prominently carinated than those from Shell Creek Canyon.

Sta. 248, at base of bluff from 100 to 150 yards east of Sta. 247, under fairly good cover of shrubbery. *O. c. obscura* numerous, with quite a number *O. y. extremitatis* (two albinos) and a few *O. pygmæa.*

Sta. 249, a short distance up the canyon from Sta. 248, where the vegetation about small rock slides at the foot of a high cliff forms good cover for snails, which were very abundant. In a short time we observed 600 live *O. pygmæa,* the same number of *O. c. obscura,* and 58 live *O. y. extremitatis.* Four of the *pygmæa* and six of the *obscura* are albinos. OREOHELIX COOPERI OBSCURA new form.

Ordinarily forms of *Oreohelix* based upon color alone are of doubtful value, but in this case the color is so striking and so uniform that I feel justified in giving to the form from this canyon a name. Of the hundreds of live examples and more hundreds of dead shells examined from stations 246, 247, 248 and 249, not one resembles typical *cooperi* in color, though I detect no other difference. With the exception of the eight albinos, they are all very dark, mostly quite black, not dark red or brown usually, with a rather broad light peripheral band, though this is wanting in many examples. In color they resemble *O. peripherica albofasciata* (Hemph.), but would not be mistaken for that form by anyone familiar with *Oreohelices.* In numbering thousands of *O. cooperi* in the last few weeks I have noticed that there is a scratch beneath the pen, as though it were being dragged across a fine, sharp file, quite different from the sensation experienced in using the pen on other species, of which I have numbered thousands recently. This scratch I noticed in the color form now described.

Most of the shells of the *yavapai* group in White Creek Canyon have the spire much more elevated, scarcely any being as flat as those from Shell Creek Canyon, and, as would be expected, the keel is much less pronounced. In fact, many

of them have the keel as rounded as in *O. s. depressa* (Ckll.) and some have the color bands well developed. A striking feature of this district is the number of albinos occurring in both *pygmæa* and *obscura*. Another unusual feature is the occurrence of three forms of *Oreohelix* intermingled. It is seldom that I have found even two together until the season of 1917, and never before have I found three together, yet at all of the stations in White Creek Canyon this occurs. These stations are really different portions of one great colony, as scattered dead shells were found all along the canyon as far as we traversed it, but we divided it into stations because of differences in cover and other conditions, and variance in the proportionate numbers of the several forms.

A NEW PRIOTROCHATELLA FROM THE ISLE OF PINES, CUBA.

BY WM. F. CLAPP.

PRIOTROCHATELLA TORREI, n. sp.

Shell depressed, trochiform, thin, fragile, above with numerous oblique plications, crossed by raised spiral lines; below *smooth;* whorls, nine, the first smooth, white, the spiral lines beginning on the fourth. Suture of early whorls simple, of later whorls denticulate, and of the last two or three whorls covered with a white moderately denticulate flange. Last whorl descending slightly, aperture very oblique. Color yellow, with irregular white patches and white denticulate sutural flange above, uniform yellow below.

Greatest diam. 13 mm., l. d. 11½ mm., alt. 8 mm. Type in Museum of Comparative Zoölogy, Cambridge, Massachusetts. No. 36888.

This species was discovered by Mr. W. S. Brooks near the *southern* end on the eastern face of the Sierra de Casas, Isle of Pines, Cuba, and later a large series was collected by Mr. Brooks and Dr. Thomas Barbour.

No genus of the great host of West Indian land mollusks is so famed for its beauty and delicacy of structure as *Priotrochatella*. Hitherto but two well-defined species have been known,